HW34

Exercises 2.4

④

Given: Equilateral $\triangle ABC$ with $AD = CE = BF$

Prove: $\triangle FAD \cong \triangle DCE \cong \triangle EBF$

Proof:

Statements	Reasons
① Equilateral $\triangle ABC$ with $AD = CE = BF$	① Given
② $AC = CB = BA$	② Def of equilateral triangle
③ $AC = AD + DC$ $CB = CE + EB$ $BA = BF + FA$	③ The whole is equal to the sum of all its parts
④ $AD + DC =$ $CE + EB =$ $BF + FA$	④ Substitution axiom (replaced the wholes in statement 2 w/ the parts in statement 3)
⑤ $DC = EB = FA$	⑤ Subtraction axiom
⑥ $\angle A = \angle C = \angle B$	⑥ Angles opposite equal sides of a $\triangle$ are $\cong$.
⑦ $\triangle FAD \cong \triangle DCE \cong \triangle EBF$	⑦ S.A.S.